

Healthy Waters in the Coastal Zone  
FY15 Task 8  
Final Report, Grant Period October 1, 2015 to March 30, 2017  
Grant# NA15NOS4190164  
Compiled by Todd Janeski, VCU, Department of Life Sciences  
Virginia Department of Conservation and Recreation,  
Division of Natural Heritage

This project was funded by the Virginia Coastal Program at the Department of Environmental Quality through Grant FY15: NA15NOS4190164 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Management, under the Coastal Zone Management Act of 1972, as amended.



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#### Overview

The VCU Environmental Scientist/Analyst, as retained by the Virginia Department of Conservation and Recreation, Division of Natural Heritage, served as the Program Manager of the Virginia Healthy Waters Program (HWP). The VA HW Program Manager maintains access to the facilities and expertise of the VDCR and continued to integrate the skills and abilities of the VCU Center for Environmental Studies (CES). The position also serves as a liaison between DCR and the CES at VCU to promote joint, applied research and outreach projects. This includes the oversight of programs, projects, grants and grant budgets, providing technical support to VDCR Natural Heritage Division and the Virginia Coastal Zone Management Program, as it relates to coastal zone ecology, management, and restoration.

Additionally, this grant supported the VA Oyster Shell Recycling Program at the VCU Rice Rivers Center as an effort of Healthy *Estuarine* Waters to reclaim waste oyster shell and return it to the Chesapeake as part of Bay restoration activities.

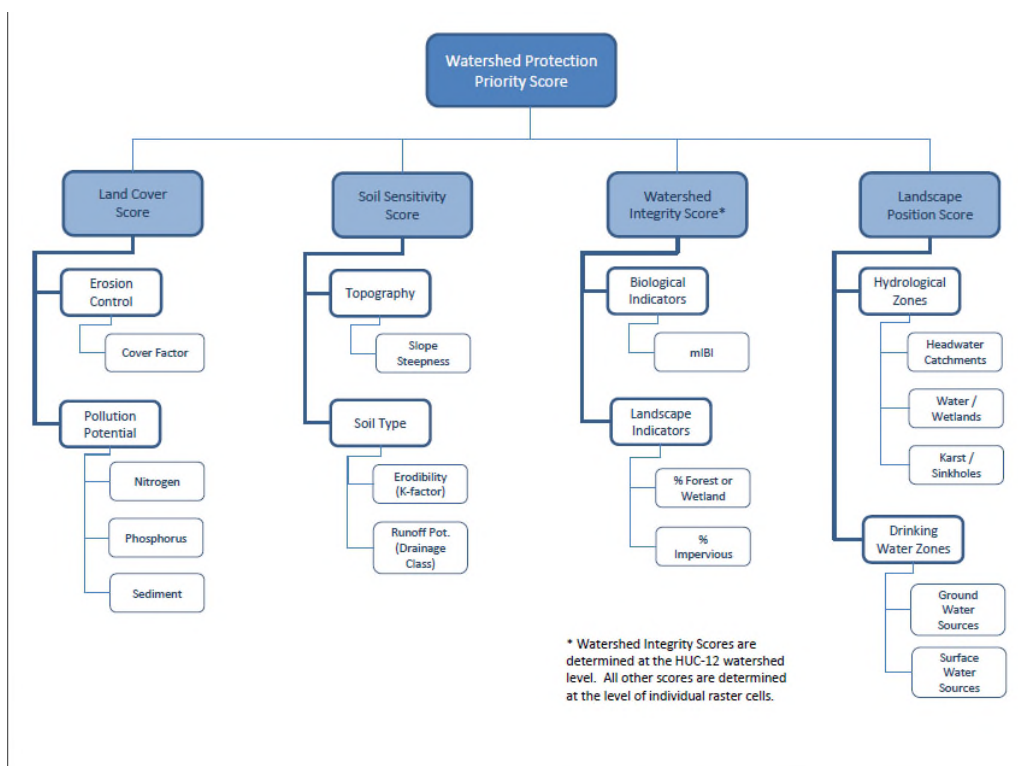
#### Healthy Waters Program

The Healthy Waters Program, at the Natural Heritage Division at VDCR, saw significant growth during the reporting period. Programmatically, the assessment of program resources and needs was conducted through an internal staff analysis that included discussions of staff resources, data collection and increased internal staff capacity. Data gaps and data integration were the two focal areas of the analysis with immediate needs to integrate existing INSTAR data into the NHD data explorer and the creation of new Ecological Occurrences (EOs) and Stream Conservation Units (SCUs). Challenges to administering the Program are development of new data to complete the statewide coverage, and the resource and staffing needs to conduct field assessments. Discussions included the improvement in program capacity by adding two field staff from the Assessment Section through the sampling season. This improved capacity permits the collection of data by additional field personnel aside from specific grant related activities. The collection of data will be in the raw form still requiring the development of models to interpret such information to make relevant to the Program as a whole. This process provides the Healthy Waters Program the ability to identify and track trends in Healthy Waters. The focus of the upcoming season will be on the Chickahominy River and Shenandoah Valley.

During the reporting period, the Program Manager continued to participate in the Chesapeake Bay Management Strategy development process to coordinate the involvement of VA Departments of Conservation and Recreation, Environmental Quality and Forestry. The Chesapeake Bay Program identified three management measure outcomes for the Healthy Waters Goal Implementation Team Four (GIT4) that included: Healthy Waters, Land Use Metrics and Land Use Options Evaluation. The Bay Program requested the development of State

two-year work plan strategies to begin during the reporting period and the VHWP Manager coordinated the VDEQ and VDOF to participate in the process. The Goal Implementation Team for Healthy Watersheds released a limited Request for Proposals for projects, in mid-2015 and the VDCR partnered with the VDOF to serve as an advisor to ensure that their modeled approach would be refined based on Healthy Waters Program data, ground-truthed where feasible and include a definition of ecologically healthy conservation areas. The VDCR DNH developed and submitted a proposal to the US Endowment of Forestry and Communities to support the Healthy Waters Program. The proposal sought funding to support the prioritization of ecologically healthy sites in the Commonwealth and to fund a field position that would directly work in support of conservation and protection actions to ensure ecologically healthy aquatic conditions are maintained. This activity, diverges from the typical work of the DNH and bridges the DNH Sections of Healthy Waters, Protection and Stewardship.

The Watershed Integrity Model, used and developed by the Natural Heritage Division and VCU, has been updated and streamlined to improve the utility and integrate new data from the latest sampling. The new model is referred to as the ConservationVision Watershed Model. This new tool includes four primary components: Watershed Integrity, Landscape Position, Soil Sensitivity, and Land Cover. A survey was distributed to stakeholders and potential users of the new model to obtain feedback on the changes and proposed weighting of various parameters. The components of the model were informed by the integration of factors and weighting of parameters that included hydrological zones, topography, and pollution potential.



Through funding from EPA 319, the Program Manager continued to manage the process by which watersheds and waterbodies are identified as Healthy and how the Program communicates

outward. The Watershed Integrity Model, used and developed by the Natural Heritage Division and VCU, has been updated and streamlined to improve the utility and integrate new data from the latest sampling. Considerable effort was put toward the final refinement of the Stream Ecological Health Assessment for the Chowan River Basin, Virginia and North Carolina; Watershed-based Ecological Health Conservation Plan for Raccoon Creek. While not a coastal basin, the outcome of this project will have significant influence on the development and implementation of conservation planning activities specifically related to Healthy Waters. The US EPA provided a final formal approval of the proposed criteria, paving the way for other similar projects in the Commonwealth. The US EPA requested the Program Manager present the findings at the upcoming National Nonpoint Monitoring conference in Boston in November, 2016. The US EPA provided a final formal approval of the proposed nine-step criteria, paving the way for other similar projects in the Commonwealth. This nine-step criteria follows the same process for TMDL Watershed Implementation Plan development but focuses on the protection actions to ensure ecological health is maintained. The US EPA requested the Program Manager present the findings at the National Nonpoint Monitoring conference in Boston in November, 2016. Feedback from participants supported the approach that utilized a conservation based focus following the nine step criteria. This iterative approach is referred to as the *A-I Criteria for Ecologically Healthy Watershed Conservation*:

- A. Quantify and verify the empirical basis for aquatic communities identified with high ecological integrity
- B. Identify conditions needed to maintain existing ecological integrity (e.g., sediment loadings)
- C. Identify best management practices and other preventative actions to achieve and maintain the system with high ecological integrity
- D. Estimate needed technical and financial resources
- E. Provide information, education and public participation component
- F. Include schedule for implementing Non Point Source (NPS) management measures
- G. Identify interim measurable milestones for implementation
- H. Establish criteria to determine high ecological integrity is maintained (eg. land cover as related to sediment)
- I. Provide a monitoring component to evaluate effectiveness

The Program Manager met with both the James River Association and the Friends of Rappahannock River to discuss how the INSTAR data and HWP might inform their protection actions in their respective regions. Currently, the James River Association was basing protection recommendations on guidance from the Eastern Brook Trout Joint Venture that generalizes conclusions about watershed condition and habitat suitability for brook trout.

Ongoing discussions with the VDEQ about the development of a Biological Condition Gradient (BCG) have been underway with the intent of integrating the HWP with those outcomes of a BCG assessment process. The HWP also met with USEPA Region 3 Office to discuss better integrating HWP data into the Watershed Resources Registry (<http://watershedresourcesregistry.com/>). The HWP Manager met with the VA Department of Transportation to discuss using the HWP data to identify potential projects that would assist VDOT in meeting their MS4 obligations and nutrient and sediment reductions.

#### Photos of INSTAR Sampling



*Aphredoderus saynus* (Pirate Perch) *Esox americanus* (Redfin Pickerel)





*Lepomis gibbosus* (Pumpkinseed) *Esox niger* (Chain pickerel)



*Estheostoma olmstedii* (Tesselated darter)

### **Healthy Estuarine Waters-VA Oyster Shell Recycling Program**

A small portion of the grant from the VA Coastal Zone Management Program to the VCU Rice Rivers Center's VA Oyster Shell Recycling Program. The goals are to reclaim waste oyster shell and return it to the Va portion of the Chesapeake. The grant supported the development of banners, stickers, purchase of containers and supported the bulk movement of shell from local storage sites to the VCU Rice Rivers Center. The Program say considerable growth during the

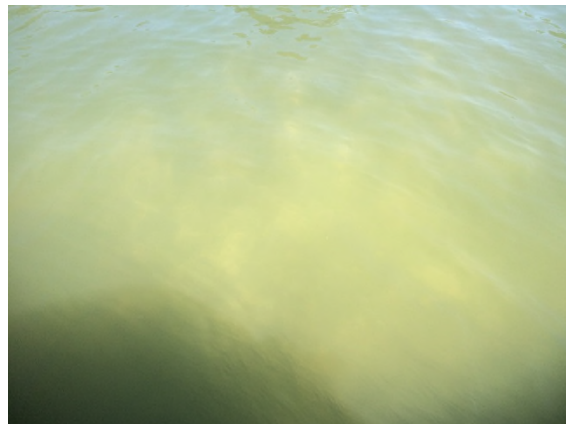
project period with expansion of operations that included a broadening of the geography of the collection to the preparation of applied restoration. The majority of support sustaining the Program is from charitable contributions through the VCU Foundation, Keep Virginia Beautiful, Virginia Green Travel Alliance, Dominion and other small donations. Dominion supported the development and implementation of a pilot 12 module curriculum that meets the Virginia Standards for Learning and was piloted in both Richmond City and Chesterfield County Schools. Considerable attention was garnered from these pilots with interest from other schools in Chesterfield but a geographic broadening to Henrico and New Kent County Schools.



The Program entered into a partnership with the WE Kellum Oyster and the Friends of Rappahannock to restore a historic oyster rock in Carter's Creek using recycled shell. A one acre reef was deeded to the Friends and shell was applied by the VOSRP and WE Kellum Oyster with a dedication planned for the summer of 2017. The reef was also selected by the VA Department of Conservation and Recreation as a Virginia Treasure and renamed from Carter's Rock to Ellery Kellum Rock in memory of the founders of WE Kellum Oyster. The Program entered into a partnership with Wanchese Seafood for a donation of 250 bushels of oyster shells from their



shucking facility. Hauling was arranged and donated by ATCO Hauling for the material to be used as part of the restoration of Ellery Kellum Rock.







The Program brokered a new relationship with the seafood industry by partnering with J&W Seafood of Deltaville to expand into applied restoration through the use of their sister company, Island Seafood of Gwynn's Island, spat setting tanks. Two 4000 gallon tanks were offered for use to the Program. Plans for the spring and summer of 2017 are to seed the shell with 10-20M eyed, diploid oyster larvae to be planted in the Piankatank River.



The VOSRP was visible at several additional events during the reporting cycle, including the

Farm Aid Concert in Warrenton, the VA Wine Expo at Bull Run, two Ducks Unlimited oyster roasts the Oystoberfest event and on the CBS6 on the Virginia This Morning Show.

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